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AUTHOR Clark, Richard M.
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ABSTRACT

Variables that schools can not directly control are predictors of a significant portion of the achievement differences of children, yet some schools seem to be operating significantly better or worse than predicted in regard to pupil achievement. This observation study represents an effort to look more closely at schools in which actual pupil achievement was higher (high outlier) or lower (low outlier) than predicted. Seven instruments were developed for this observation study: (1) classroom observation form; (2) observation of a reading group form; (3) teacher reinforcement scale; (4) characteristics of open education form; (5) teacher questionnaire; (6) principal interview form; and (7) reading teacher form. Names of 14 principals in upstate New York were obtained--seven were located at high outlier schools, seven were at low outlier schools. In each case, the principal arranged access to nine elementary school classrooms (k-6). Two observers visited each school. Each observed four different classrooms, and the pair observed one classroom together. In addition, an interview was held with the principal and with a reading teacher in the school. Some of the major ways in which low and high outlier schools differ according to the data are: teachers in high outlier schools were warmer and more responsive, showed more emphasis on cognitive development, were more effective in maintaining the desired level of control in the classroom, expected more children to graduate from high school, perceived the children as more intelligent and more pleasant to teach; higher outlier schools appeared more open and principals in high outlier schools saw their personnel as more competent and themselves as having better rapport with teachers, parents, and pupils. (MM)

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A Micro-Study of Teacher Behavior in Outlier Schools

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Richard M. Clark
State University of New York at Albany

Do different schools and different teachers really have a different effect on how children learn? This question has long been of interest to educational researchers. A popular answer has been that schools and teachers really have very little differential effect. The great spread of pupil achievement is almost entirely accounted for by factors external to the school. Pupil achievement, or the lack of it, is a product of social class, of neighborhood, of initial intelligence, or of books in the home. Class size, money spent by the district for education, level of education of the teacher and other such school related variables have not been seen to be highly related to school schievement. For example, Jencks and Brown (1975), in a reanalysis of Project Talent data for 98 high schools, conclude

> ... high school characteristics such as social composition, per-pupil expenditure, teacher training, teacher experience, and class size have no consistent impact on cognitive growth between ninth and twelfth grades. These findings imply that if we want to boost student performance, we need drastically new methods. Our data tell us nothing about what methods might be most effective. They tell us only that more money, more graduate courses for teachers, smaller classes, socio-economic desegregation and other traditional remedies are unlikely to have much effect. (p. 320)

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As can be seen from the regression studies that were presented as part of this symposium, variables which schools can not directly control do predict a significant portion of the achievement differences of children. Yet, as seen in the Outlier Studies, some schools seem to be doing significantly better and some significantly worse than predicted on the basis of regression prodedures. The observation study represented an effort to look more closely within schools in which pupil achievement was higher or lower than predicted.

A group of faculty and advanced graduate students in education was enlisted to work on the study. Starting with the original outlier forms, and a review of relevant literature, the group attempted to generate suggestions of relevant factors that might be observed in schools. Specific scales and scale definitions were then developed.

Arrangements were made for field tryouts of these scales in two public schools. In each case, four observers visited the school. Pairs of observers made twenty-minute observations in six different classrooms so that each observer was paired with every other observer. Also a pair of observers interviewed the reading teacher and the other two observers interviewed the school principal.

After the first field trials had been made, data were inspected for reliability, and a group meeting was held to discuss problems and procedures. In this meeting agreement was reached that some forms needed revision, some categories needed redefinition, and some new areas needed to be included.

After instruments had been revised and constructs redefined, names of principals of fourteen school buildings in upstate New York were obtained, based on analyses described earlier. Seven buildings were low outliers, and seven were high outlier. Observers were unaware of whether a school was "high" or "low."

In each school the principal arranged access to nine elementary school classrooms between kindergarten and sixth grade. (In a few of the smaller schools, nine classrooms were not available.) Two observers visited each school. Each person observed four different classrooms, and the pair observed together in one classroom during the day. In addition, an interview was held with the school principal and with a reading teacher in the school.

This report includes a brief description of each of the seven instruments that were developed. Data from four instruments were obtained by classroom observation. A factor analysis of the observation data is presented and discussed. A summary of the major ways in which high and low outlier schools were different is also provided.

General Classroom Observation Form

The General Classroom Observation Form consists of 16 items. Questions are grouped under the area of program emphasis, teacher behavior, pupil behavior, and facilities. A five-point Likert scale was used. Operational definitions were developed for each end of the scale. The form was developed specifically for this study.

Observation of a Reading Group

The form used for observation of reading classes is a modification of an observation system developed and tested by Educational Testing

Service (Quirk, et al, 1973; Weinberg, et al, 1974). To develop the original instrument, members of a research team visited second, fourth, and sixth grade reading classes and kept a log of the activities that took place. Eventually, they arrived at twelve categories to describe what they called the Content of Instruction. They also developed definitions and examples of each area. The ETS procedure called for a different student to be scored on the instrument during each fifteen second interval in an observation period of fifteen minutes.

Because in this project a broader range of observational data were desired, it was decided to attempt to score each category of Content of Instruction on a Likert scale arranged from "Little" to "Much." The categories "Extraneous" and "Negative Feedback" were dropped from the scale since other observation devices covered these areas. Separate ratings were to be made of the activities of children in a reading group directed by the teacher and children not in the reading group.

Thus, the form used in the first field tryouts consisted of ten categories to be rated for the reading group and the children not in the reading group. From these tryouts it was determined that one additional area, oral reading, was needed for the reading group. A definition was written for this area. Also, observers found that the categories available did not allow adequate description of the behavior of children not in reading groups, and that too much inference was required to determine whether a child writing at his seat was working on word recognition, language structure, or spelling. Therefore, the list of items to be rated for the non-reading group was revised and new definitions written.

Teacher Reinforcement Scale

The Teacher Reinforcement Scale for this set of observations was developed for use in this study. From the review of literature it seemed clear that teacher reinforcement might well be a critical variable in how children learn, but the problem remained of how to score this domain in a simple but meaningful way. It was agreed that one might discriminate between positive reinforcement in the form of praises or token reward, and punishment in the form of scolding, criticizing, withholding privileges, and the like. These punishing behaviors are labeled as "negative reinforcement" on the form, although they do not fit the classical learning definitions of negative reinforcement.

Along with the distinction of positive and negative, distinction was made between frequency and potency. Some teachers used a great number of remakrs such as "good" or "correct," but they used these remarks so routinely that observers wondered if they would really have much effect. Other teachers did not praise as frequently, but they extended and elaborated their comments. Obviously, an observer can't be sure of the effect of either form of comment on a child, but the rating of potency is included as a subjective measure in which the observer attempts to score the meaningfulness of the reinforcement given.

Finally, it was agreed that what the teacher reinforced was of interest. In some cases teachers praise or punish the child's actual product--his math paper, or the way he reads. At other times teachers praise the child's general conduct or social behavior--the way he pays attention or works on an assignment. Therefore, it was decided to attempt to separate ratings for instructional specific and general support/social behavior reinforcement.

Characteristics of Open Education

Items from the Characteristics of Open Education form were derived from the Walberg-Thomas (1971) instrument. In their procedure, teacher interview was used as a means of supplementing classroom observation, while in this study only observation was used to derive data. Since this form was not used in preliminary field work, no data were available to form a basis for revision. Observers reported that some items were not really suitable for observation and also indicated that clearer polar definitions would be useful.

Teacher Questionnaire

In the first planning meeting the Project team discussed the question of how to obtain information from teachers that could not be gained through observation. Clearly, it would be desirable to know about teacher intentions, philosophy, evaluations of children, relationships with administration, and a host of other variables. At the same time, to build in even a modest teacher interview would drastically reduce the number of teachers who could be observed during a school visit.

The decision was finally reached to prepare a questionnaire which could be responded to very quickly. The areas of concern in this questionnaire were derived primarily from variables that appeared promising in the Outlier Study. Thus, the teacher is asked about her expectancies for the children she teaches, her assessment of the general ability and attitude of her present class, the degree to which she would expect help for various problems that might be encountered, and her assessment of the locus of control for decision-making.

Principal Interview

The Principal Interview form was developed in large part from variables that seemed to be of interest from the original Outlier Study (Irvine and Heim, 1973). An effort was made to obtain (1) specific demographic information about the school; (2) subjective impressions of the principal concerning the professional staff in the school, the adequacy of facilities and material support for the reading program, the locus of control of the reading program; and (3) principal's judgment of special problems and special assets of the school.

Although the form calls for precise answers to most of the questions, the procedure specified an informal interview approach. Thus, the person obtaining data was encouraged to engage the principal in discussion of the areas to be covered and to probe in specific areas until a scorable answer was obtained. The order of questions might be modified to fit the circumstances.

Reading teacher Interview

The interview guide used with the reading teacher in each school was adopted from an "Observer Guide-Reading" which was made available to the Project Director to Mrs. Jane Algozzine, Chief of the Bureau of Reading, State Education Department. Originally, this observation instrument was used in direct classroom observation, supplemented by teacher interview, to describe the degree to which reading practices seen as

ideal were actually practiced. The original instrument consisted of 13 categories, each to be evaluated from "low" to "high" on a five-point scale. Paragraphs describing "low" and "high" practices were provided for each item. Also, in the original instrument, considerable space was provided for comments on each room.

In this study it was decided to use ten of the thirteen "Observer Guide-Reading" categories in an interview format with the reading teacher. The definitions of "low" and "high" behavior for these ten categories were used as a guide for interviewer scoring. Aspects of the reading program which were questioned related primarily to reading as it is carried on in the classroom. Therefore, the reading person who seldom visits the classroom or talks with the teacher could not be expected to give valid responses to the questions asked. However, all reading teachers did indicate a general familiarity of the reading program as carried on in the classroom and did seem to feel that they had a good idea of the answers to these questions about the reading program.

Analysis of Data

Presented in Table 1 are some of the results of a factor analysis of the items rated in the classroom.

Table 1 about here

The five factors which are presented account for 43.1% of the total

variance. All factor loadings of more than .30 are indicated. As can be seen, factor one is largely defined by items on the Open Education form. Factor two is largely defined by items on the General Classroom Observation Scale and positive reinforcement items of the Teacher Reinforcement Scale. A considerable amount of overlap exists between Teacher Behavior items which load on both Factor one and Factor two. Factor three is defined by items on control efforts, control effectiveness and negative reinforcement. Factor four is defined primarily by the potency of reinforcement items, while Factor five is largely defined by items on the Observation of Reading scale.

A complete contrast of the quantitative differences between high and low outlier schools is available in the final project report (Clark, 1974). In this paper, only the major conclusions are summarized.

Summary of Findings Which Differentiated Schools

1. Teachers in high outlier schools made less overt effort to maintain class control, had less rigid student behavior but were more effective in maintaining the level of control they appeared to want.

2. Teachers in high outlier schools were rated as warmer, more responsive, and showing more emphasis on cognitive development in classes that did not involve direct reading instruction as well as in reading classes.

3. Teachers in high outlier schools expected more children to graduate from high school, to go to college, to become good readers, and to become good citizens.
4. Teachers in high outlier schools see the children they teach as more intelligent, better behaved, more pleasant to teach, and their parents as more concerned.
5. Teachers in high and low outlier schools do not see different amounts of administrative help available in handling problems.
6. More total activity takes place in reading classes in high outlier schools than in low outlier schools.
7. Children in reading classes in high outlier schools engage in more salient reading, while children in low outlier schools engage in more oral reading.
8. Reading teachers in high outlier schools evaluated the reading program more favorably. Teachers were rated more favorably in using appropriate material, extending reading into other areas, asking children to read with a purpose, and using informal diagnosis.
9. In grades one to three, teachers in high outlier schools gave more positive and less negative reinforcement than did teachers in low schools.
10. High outlier schools appeared more open than low outlier schools.
11. Principals in high outlier schools generally saw their personnel as more competent than did principal in low outlier schools.
12. Principals in high outlier schools saw themselves as having better rapport with teachers, parents, and pupils than did principals in

low outlier schools. Principals in low outlier schools reported better rapport with the school board.

13. Items on physical space and facilities generally did not differentiate between high and low schools.

Summary and Conclusion

At the end of the study each observer was asked to submit in writing his impressions of each of the devices, problems they faced and the like. A limitation of this study, noted by several observers, was the fact that the work was carried out very near the end of the school year. Of great interest is the question of whether similar differences would be noted at the beginning of the year. Perhaps, in the area of management instruction for example, some teachers give much direction very early in the year, establish a firm routine, and need to give relatively few such directions thereafter. Observers in this study reported more management instruction in low than in high schools, but it would be interesting to note whether this difference is the same at the beginning of the school year.

Thus, next steps that might be taken in this area are:

(1) Select the variables that seem to be related to the clearest differences between schools.

(2) Attempt to clarify further the behaviors that are being rated and the criteria for rating each of these variables.

(3) Consider whether the variables identified by these procedures could be meaningfully divided into sub-parts to be more specifically studied.

(4) Try out revised materials on a broader geographic basis and with schools that are demographically more diverse.

(5) Experiment with these materials in an in-service and/or pre-service context.

(6) Work systematically with a group of teachers to see if teachers can learn to vary selected behaviors, and study the effects of such variation.

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	FACTORS				
1. Observation of Reading	1	2	3	4	5
Children in Reading Group					
Comprehension					
Pronunciation and Word Pattern					.79
Language Structure					.75
Reading Silently	.37				
Reading Orally					
Spelling					.55
Writing					
Copying					.35
Listening Instructions					.59
Non-Reading Instructions					
Management Instructions					
Children not in Reading Group					
Reading Silently					.60
Writing					
Copying					
Non-Reading Instructions					
Play	.35				
Social Interaction	.36				.37

2. General Classroom Observation Scale	1	2	3	4	5
Program Emphasis					
Cognitive		.63		-.36	
Language					.47
Social		.61			
Teacher Behavior					
Control efforts			.83		
Control effectiveness		.49	-.49		
Warmth		.82			
Amount of interaction	.48	.46			
Risk returning	.35	.69			
Responsiveness to student ideas	.31	.58			
Use of pupil responses	.29	.34			

Pupil Behavior	FACTORS 1	2	3	4	5
Enthusiasm		.80			
Rigidity	-.35				
Optimum				.53	
Attentiveness		.59			
Facilities					
Attractiveness		.46			
Adequacy of space					
Use of space	.38	.35			

3. Teacher Reinforcement		1	2	3	4	5
Instructional specific						
Frequency	Positive		.79			
	Negative			.66		
Potency	Positive		.66		.45	
	Negative				.62	
General Support						
Frequency	Positive		.69			
	Negative			.64		
Potency	Positive		.57		.43	
	Negative				.72	

4. Open Education Teacher Characteristics (Abbreviated)	1	2	3	4	5
1. Time to individuals, not group	.83				
2. Teacher uses child interaction	.59				
3. Teacher encourages independence	.68				
4. Individual child diagnosis	.56				
5. Teacher encourages fantasy					
6. Diverse instructional materials	.64				
7. Materials accessable	.55				
8. Children move freely	.79				
9. Children use other areas					
10. Many different activities	.86				
11. Much individual work	.85				
12. Individual evaluation	.59				
13. Individual instruction	.52				
14. Teacher respect for child	.47				
15. Children freely express feeling					
16. Teacher promotes trust	.34	.41			
17. Teacher keeps learning					
18. Teacher is secure	.71				

Table 1

Principle Components Factor Analysis of Four Classroom Observation Instruments